'*Eugenics is the science which deals with all influences that improve the inborn qualities of a race; also with those that develop them to the utmost advantage.*'—SIR FRANCIS GALTON (1904)

The Eugenics Review

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NOTES OF THE QUARTER

SIR JAMES GRAY, C.B.E., M.C., Sc.D., F.R.S.

THE EUGENICS SOCIETY'S new President assumed office at the Annual General Meeting on May 23rd, 1962 at the completion of Sir Julian Huxley's tenure of office. The *Society* looks forward to the leadership of another eminent zoologist, who concluded his address as President of the British Association in 1959 by saying that we should have "the courage to believe and to teach that [man] can, by means of his intellect, control and direct his own evolution and destiny."

Sir James Gray's interests have been wide, and his achievements notable. He held the chair of Zoology at Cambridge for twenty-two years —from 1937 to 1959—during which time that Department grew to be the acknowledged leader in experimental zoology in this country and produced many holders of zoological chairs elsewhere. For long a trustee of the British Museum, a member of the Development Commission and President of the Marine Biological Association, he becomes the Eugenics Society's tenth president with an unusual understanding of the inter-relationship of human affairs with modern zoological thought and research.

The *Society* owes much to Sir Julian Huxley for his leadership of its affairs and for his world-wide advocacy of man's duty to guide his future wisely; it welcomes his successor in these days of expanding biological opportunity for mankind.

THE GALTON LECTURE

IN THIS ISSUE we publish the Galton Lecture for 1962, delivered by Sir Julian Huxley a fortnight after he had completed his three years' presidency of the Eugenics Society. Sir Julian, apart from his many other distinctions, is one of the four people who have given more than one Galton Lecture.* He spoke previously on February 17th, 1936 on "Eugenics and Society." The content of the two lectures provides an interesting comparison which exemplifies the progress of genetics, the change in the climate of opinion of the day, and the evolution of the philosophy of the speaker.

Some sections of the Press of our day, like the distorting mirrors of the fairground, can be relied upon to select and enlarge rather than reflect in due proportion any subject in its entirety. In 1962, the popular press picked upon the concept of eutelegenesis as the novel titbit for magnification and comment. It is interesting to find the same topic, then a real novelty, mentioned by Sir Julian in 1936.† In the years between, there has been a declaration by an Archbishop; there has been an official Departmental Committee and Report;‡ and there exists

* The others have been: Professor J. Arthur Thomson, Major Leonard Darwin and The Rt. Reverend E. W. Barnes, then Bishop of Birmingham.

† See THE EUGENICS REVIEW, 1936. **38**, 30.

‡ Home Office. *Report of the Departmental Committee on Human Artificial Insemination.* Cmd. 1105. 1960. H.M.S.O. See THE EUGENICS REVIEW, 1961. **52**, 191–2.

an Artificial Insemination (Donor) Investigation Council. In any particular set of circumstances, which include contemporary public opinion and level of education, it may or may not be expedient or morally acceptable to act upon new technical advances. But there should be an understanding of the potentialities and a willingness to ponder the possibilities of hastening human evolution along the lines so skilfully advocated by Sir Julian. The growth of knowledge, as always, sets still further problems in the realms of responsibility and freewill.

The progress of educated awareness, and the growth of frankness in print, are nicely exemplified by the drawing from *Punch* which is reproduced on p. 175 of this issue of the REVIEW.

A.I.D. INVESTIGATION COUNCIL

A REMINDER MAY here be appropriate that A.I.D.I.C. was set up and subsidized by resolution of the Eugenics Society's Council in 1958. This autonomous Council remains under the Chairmanship of Professor A. S. Parkes and has a distinguished membership; it uses the *Society's* London address for convenience of administration. Attention may be drawn to the qualifying use of the word "investigation" in the Council's title.

POPULATION IN PEASANT SOCIETIES

PROFESSOR CARLO CIPOLLA, in his recent Pelican book, *The Economic History of World Population*, has written that "There is no doubt that industrialization brings with it an extraordinary improvement in the average material standard of living. It is not to be supposed from all this that the industrial world must necessarily be a good one. There is nothing in the mechanism of the spread of the Industrial Revolution which guarantees *a priori* that the material result will be used for good ends. Unless mankind makes an enormous effort of self-education the possibility that the Industrial Revolution may eventually come to represent a disastrous calamity for the human race cannot be altogether excluded."

In fairness it should be added that Professor Cipolla does not end on a note of pessimism; instead he states what are in his view the main objectives at which the human race should aim in order to prevent the Industrial Revolution from becoming a calamity. Among these he includes both an improvement in the quality of populations and a better standard of education, leading to effective control over population growth. No doubt members of the Eugenics Society will heartily concur in both these conclusions.

In order to judge whether or not the Industrial Revolution could conceivably prove to be a misfortune it is necessary to arrive at an accurate concept of the state of man in the agricultural phase of his development. This may be seen in countries that even to-day are largely untouched by industrial modernization. It may be studied in Europe by historical methods. There are several ways in which historians tackle this problem, but for a quantitative assessment it is desirable that a demographic analysis should be attempted. The only material available for such an analysis is, in general, the parish registers of births, marriages and deaths. These may not be complete, and in any event they give no information about migration, and do not show the numbers of persons present in the parish at any given moment. It is possible, however, to build up a picture of the local population if individual persons can be traced from birth to marriage and from marriage to death, assuming that there were no movements away from and back to the parish in between these events. Such a picture has recently been drawn, for a part of France during the Seventeenth Century, by M. Pierre Goubert in his book *Beauvais et les Beauvaisis de 1600 à 1730.*

What are the features of life in Beauvais in the Seventeenth Century A.D. that M. Goubert discloses? Up to one-third of new-born infants did not survive their first year, and the expectation of life at birth probably did not exceed twenty-five years (compare seventy years to-day). This was the *normal* state of affairs. Worse still, however, subsistence crises occurred at irregular intervals—eight of them in the period of 130 years under review—in which up to one-fifth of a village population might be wiped out, and in which marriages and births almost ceased to occur. These crises might well be accompanied by severe epidemics, but they can be shown from other records to have been associated with acute food shortages. In other words, they were an

example of the checks to population, imposed by lack of subsistence, to which Malthus referred not long after the end of the period in question.

This demographic account may not be completely accurate in detail; it may even be altogether too pessimistic; but in the light of the more recent history of under-developed and economically emergent countries it is by no means an implausible one. The fruits of the Industrial Revolution would have to be bitter indeed to represent a retrogression from such a state of affairs, even if life can be imagined to have been sweeter and more wholesome while at the same time so much shorter and more uncertain.

LORD CASEY AND THE POPULATION OF ASIA

ONE MAY WONDER how many noble Lords appreciated the significance of a chance juxtaposition in their recent business. At 2.5 p.m. on June 6th, 1962 Lord Boothby in the House of Lords inquired about the Dearth of Herrings in the North Sea, to be followed by Lord Casey at 2.24 on Population Pressure in Asia.* Thus, just a year after its debate on the Motion "that further development and education in the regulation of birth would contribute to world peace,"† the House of Lords took up again the problems of human numbers and needs and the usefulness of contraceptives in the difficult matter of marrying the two. Whatever the precise things said on such an occasion—the sensible and the silly, the general and the too particular—the return to the general topic in less than a year in itself demonstrates real progress in the realization of the harsh facts of life.

Lord Casey's own contributions in opening and closing the debate were an admirable exposition of the fundamental need for control of numbers—so clearly seen by the leaders of India and other countries—and of our western duty to seek still further knowledge and to provide existing knowledge so far as we are capable to those who seek it.

Unfortunately Lord Casey was followed immediately by Lady Summerskill who chased her own exciting little pharmacological hare in the form of detailed criticism of the oral contraceptives so far available—with, for good measure, seeming slurs on the pharmaceutical manufacturers.

Lord Milverton, in the shadow of his knowledge of Hong Kong—a growth from 600,000 in 1949 to 3¼ million people to-day—remarked that birth control "can only be an adjunct, not the final solution." He confessed himself a pessimist in face of the prospects. Lord Beveridge reiterated that each country must decide for itself in its relation between total population and standard of living— ". . . a purely national problem . . ." But, in fact, there is in these days everywhere an unjustified expectation of the highest standards of living ever so far achieved.

The Bishop of London spoke of personal relationships and the need for education, and the Earl of Lytton said that the population of the United Kingdom had multiplied tenfold in 250 years. That was all to the good but it was hardly for us to endeavour to control the breeding of others.

Lord Brain's contribution was, in part, surely a deliberate attempt to get the debate back on to fundamentals. He stressed that the real thing is search for knowledge, and then others can use it if they wish. He stressed the need for quality in life, so rising above the basic relationships between numbers and food supplies.

Lord Walston wanted more food in the world: he also wanted a demographic institute. He thought that "it surely must be a confession of complete failure on the part of our civilization and the Western way of life if in fact we admit that we want fewer people in this world." With him the Earl of Longford—he to whom Lord Brabazon in the earlier debate had referred as "my Lord Cardinal Longford"—agreed "above all" in "his insistence that human life is good, that a large population is better than a small one." He made the usual quantitative error of thinking the figure of 5,000 (previously mentioned in its correct content as the increase in world population during the period of debate that afternoon) was the total of babies born in that period. He also said "My lords, I am not sure why I am speaking. . . ."

* House of Lords Official Report (*Hansard*), 6.6.62. Vol. 241, No. 91. Col. 601–626 and 633–666.

† THE EUGENICS REVIEW. 1961. **53**, 130f.

Lord Killearn drew attention to the connections between human numbers and wars.

The Duke of Devonshire in reply found himself in agreement with everybody else's wiser points. He drew attention to the small importance of world grain surpluses in relation to the actual global need. He stressed that India is in fact spending £17 million on population limitation in the present five-year plan.

Lord Casey closed with a telling quotation from the Indian Ambassador to the United States. "There are three specific kinds of assistance of which India is desperately in need. The sharing of experiences in population control by the advanced countries; the very substantial increase in research in the United States for a simple and inexpensive contraception method; thirdly, technical aid, especially of manufacturing facilities for family planning supplies."

ISLAMIC OPINIONS ON CONTRACEPTION

UNDER THIS TITLE Akhter Hameed Khan of the Pakistan Academy for Village Development has published a translation from the writings of two Islamic theologians, Al-Ghazzali (1058–1111) and Ibn Kaiyim (1292–1350) in so far as they refer to the acceptability of contraception.*

There follows a discussion of these ancient teachings in the light of modern conditions: several Moslem countries are concerned with the problem of over-population, and the traditional pride in an abundance of children, if not of wives, still prevails.

This tradition goes far back to the early days of Islam, when it challenged the Roman and Persian Empires and the need for numerical superiority led to the institution of polygamy. But although reproduction was encouraged, it was never made obligatory. The author concludes:

> The ancient theologians have freely discussed the question of contraception and an eminent majority have declared it valid and proper. Al-Ghazzali is the greatest exponent of orthodox views, hallowed by a consensus of generations of ulemas [theologians]. And Al-Ghazzali declares that a Muslim may adopt contraceptive precautions for graceful living, to preserve his wife's beauty and vigour, or to escape numerous anxieties caused by a large family.
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> It is fortunate for the Islamic community (so meticulous in its regard for precedents, and so respectful of the ancients), to have such a decisive verdict on the propriety of an individual planning his family. However, the ancients have nothing to say on the control of national populations. For many reasons our ancestors were not bothered with this problem which for us, their less fortunate descendants, contains a terrifying crisis.
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> If the Ulemas of today would study carefully the new economic and social factors and if they would respond properly to the new challenge, they would advise the Muslims to discard the old preference for many wives and children, and to adopt family planning as a policy for the common welfare. The Ulemas of today would find no religious injunctions against this view. Control of birth, as Al-Ghazzali and Ibn Kaiyim point out is not prohibited. On the contrary, it is permitted by tradition and by the concensus of opinion. The real obstacle is the weight and inertia of custom, and the uninformed minds of the blindly conservative moulvis. Their training is almost entirely in medieval disciplines, and, as a class, they are blissfully unaware of the problems of political economy. But the welfare of the community demands fresh thinking, not inhibited by customary prejudices, and not divorced from contemporary knowledge.

The ancient Ulemas were, of course, referring to contraception by withdrawal, but once there is a full appreciation of their tenet that contraception is not "small infanticide," and when the present-day teachers whom Akhter Hameed Khan castigates can be persuaded to widen their horizons, the way should be clear for the adoption of modern contraceptive methods in the Moslem world.

Islamic Opinions on Contraception was first published in 1960; it may already have borne some fruit. *The Times* of May 24th, 1962 reports the first birth control conference organized by the Egyptian Medical Association and a pharmaceutical manufacturing firm. *The Times* correspondent states:

> Hitherto there has been hesitancy on the part of the Egyptian authorities about introducing birth control, as it was feared that the shaikhs would oppose it, but the religious authorities have now ruled that it is not contrary to Koranic precepts.

TIME AND THE PILL

THE POPULATION "EXPLOSION" is so-called because the time factor in population increase has

* Reprinted from *Journal of the East Pakistan Academy for Village Development*. Comilla. 1960. **1**, 3 and 4.

become unprecedentedly dominant. *The Times* leader of June 19th, 1962 seems unreasonably lacking in perception when it states: "Even to-day the expression [population explosion] is still commonly used though no one knows what they mean by it." The containment of the explosion primarily requires the widest availability of suitable contraceptives. And it is recognized that variety in contraceptives is requisite because of both the variety of people and the variety of circumstances in which they live. Of mechanical contraceptives it may now be stated unequivocally that, clumsy though some may be, the passage of time has shown them to be harmless in use. This is probably also true of certain of the spermicidal preparations. But the time factor is at present under renewed fire with regard to oral contraceptives.

The Medical Advisory Committee of the Family Planning Association has given approval to oral contraception subject to certain safeguards including regular medical examination. On the other hand the *Lancet*, in its leading article of June 2nd, 1962, draws special attention to the view that as yet there is not sufficient experience for complacency about the absence of possible long-term reactions. So far there is inadequate evidence about the precise physiological or biochemical mechanisms by which sterility is induced by these first oral contraceptives, and about the dangers inherent in interference with human "biological clocks."

The difficulty is, of course, that there is no method of accelerating the effects of time experimentally: time must be allowed to elapse. As the *Lancet* says "twenty years may go by before we can be sure about the safety of the present oral contraceptives." In those twenty years some countries with above present average rates of increase will actually double their present populations, and the world as a whole, on current rates, will contain more than another 1,000 million people.

The *Lancet* concludes "in a fortunate and well-fed country where other methods of contraception are available and effective, it seems sensible to restrict their [oral contraceptives] use . . . to those circumstances where other methods of contraception are impossible or ineffective. Elsewhere, in overcrowded lands, where starvation for many is a more serious and immediate threat than uncertainty about future ill health in a few, the advantages of oral contraception may well be judged to outweigh the risks."

There is a clear difference in the assessment of risks which are not capable of precise measurement. The F.P.A. medical leadership feels that the risks are acceptable. The *Lancet* promulgates the view that the risks are not acceptable in advanced lands. Both recognize that risks can never be entirely absent. The repercussions, in opinion and in practice, of the *Lancet* leader will be interesting to observe. It is to be hoped that fanatics in less fortunate lands will refrain from crying aloud that the west is foisting upon them "dangerous drugs." But the necessity remains obvious: until the perfect pill is found and demonstrated to be safe over a full generation, the study of other methods of birth control must not be neglected. Foam tablets and the modern derivative of the earlier Gräfenburg ring may have a part to play for many years yet. From the strictly eugenic point of view, the precise method of contraception is of course immaterial. The need is that, worldwide, reproduction should become an affair of the intellect, and that favourable differentials in fertility may everywhere be encouraged.

MARRIAGE GUIDANCE

LADY LEWIS *writes:* The Marriage Guidance Commission of the International Union of Family Organizations met in June 1962 at Tours under the Chairmanship of Dr. David Mace. It was attended by some sixty people representing eleven European countries.

There were two main subjects for discussion: The Middle Years of Marriage and The Characteristics of an Efficient Marriage Guidance Service.

Dr. Théodore Bovet, director of the (Swiss) Christliches Institut für Ehe und Familienkunde, discussed the emotional problems of the middle years of marriage. He stressed the theoretical aspects, using the concepts of C. G. Jung. The ensuing discussion turned chiefly on infidelity, disparity of age between the partners, physical ill-health, and the boredom of some women at the very time when their husbands are

engrossed in affairs. Spanish delegates referred to the late age of marriage among men and long hours of work as causes of strain in marriage in their country.

The second day of the Conference opened with a paper by Mr. A. J. Brayshaw, General Secretary of the National Marriage Guidance Council, on the Essentials of a Marriage Guidance Service. Mr. Brayshaw stressed that Marriage Guidance Clinics must accept responsibility for providing educational as well as remedial services. They must also provide training for counsellors in keeping with the religious and other traditions of each country. Mr. John Wallis gave some details of the English system of choosing counsellors mainly for their temperamental suitability and then training them under psychiatrically orientated tutors in small residential study groups.

Dr. Groeger of the Konferenz für Ev. Familienberatung (Dusseldorf) gave an account of his method of training through discussion groups, and Mmes. Saint-Germier and Lieury of Paris stressed the importance of supervised case work and in-service training. Dr. John Marshall explained the ways and means whereby courses for young couples in preparation for marriage could be made widely known and effective, and, in another context, he urged greater effort to reach the "working classes."

In the course of discussion on the services which marriage guidance clinics might provide, the Chairman allowed me time to outline the work of Genetics Counselling Clinics in this country. I urged that Marriage Guidance Clinics should be in a position to tell clients who were worrying about genetic problems how they could obtain expert advice. I suggested that in places where genetics counselling clinics were not available, a questionnaire or guide of the kind drawn up for the Eugenics Society some years ago, might at least get for them a postal opinion or prepare the way for a consultation with a busy geneticist.

In conversations with participants I was impressed by the extent to which medical advice on sexual problems and family planning is now available through marriage guidance associations. This holds good for the Roman Catholic as well as for Protestant countries, and it is striking to compare the freedom of discussion at Tours with the constraint one felt at the International meeting of the Family Organizations in Paris (1958) when four British member organizations of the I.U.F.O.* with Dr. Blacker as their chief spokesman made an impressive and well-timed plea that birth control should be considered more widely by members of the Union with, of course, due regard to the regulations of religious groups. Roman Catholic agencies are now sponsoring medical research on the reliability of the rhythm method in which individual variations in body temperature with ovulation are being checked and progesterone is used for short periods in some cases to stabilize menstrual periodicity.

It is obvious that family planning as part of the services provided for marriage guidance is steadily gaining ground in Europe, even in countries previously indifferent or opposed to it.

THALIDOMIDE MALFORMATION

EXPERIMENTAL EMBRYOLOGISTS DISCOVERED more than a generation ago that deprivation of vitamin A, of a degree insufficient to upset the health of an adult female pig or rat, might produce developmental abnormalities in any embryos she was carrying. It was in the early part of pregnancy—the equivalent to the first twelve weeks of embryonic life in humans when the main organs of the body were being laid down—that the embryo was particularly vulnerable. Since then it has been possible to induce such malformations in a great variety of ways including vitamin deficiency, vitamin excess, toxic drugs, endocrine preparations, ionizing radiation and virus infection.

Hitherto these environmental agents appear, however, to have played little part in causing malformations in humans. German measles is the only infection known to cause embryonic malformation in man and, apart from the occasional epidemic, makes little contribution to the total incidence of malformations. Once the danger of heavy doses of radiation to the embryo were recognized, the risk was avoided. Only occasional instances were known where unfortunate women, taking powerful anti-metabolic drugs, such as aminopterin, as abortefacients,

* THE EUGENICS REVIEW. 1958. **50**, 185–88.

had children with malformations probably attributable to the drug.

In 1961, however, it was first noted in Germany, that an unusual number of babies were being born with severely shortened and malformed limbs. These cases were finally related to the mother having taken early in pregnancy a drug, thalidomide, which was being widely used in Germany as a soporific and a sedative. Major defects of the internal organs, gut, heart and kidney, may occasionally accompany the limb malformations. Once the danger was recognized the drug was withdrawn. But in Germany it is estimated that some 3,000 malformed babies had been born. In this country, if Liverpool and Birmingham (which have the best-kept records of congenital malformations) are representative,* some 600 deformed children will have been born. This is perhaps a small number in relation to the 15,000 or so babies born annually in this country with severe congenital malformations, but nevertheless is extremely unfortunate.

Perhaps three lessons are to be learnt from this experience. First, that pharmaceutical firms must test their products on a variety of experimental animals for toxicity to the embryo. This will not guarantee safety, because of species differences in sensitivity, but it will reduce the risk. Secondly, all pregnant women should avoid the widespread, but often entirely unnecessary, habit of taking sedatives and sleeping pills for at least the first three months of any pregnancy. Thirdly, there is scope for the medical and pharmaceutical professions to set up an organization from which the medical practitioner, who has the responsibility for prescribing drugs, can get advice on the safety of the constant stream of new drugs which are brought to his notice by the drug firms.

TUBERCULOSIS IN IMMIGRANTS

IT IS NATURAL that immigrants should tend to bring in with them patterns of disease typical of the countries from which they come. Where the disease is largely genetically determined, the patients being homozygous for a mutant gene, this will result in a long-lasting increase in the incidence of the disease in this country. Until quite recently congenital microcytosis, sickle-cell anaemia and favism were almost unknown here. Cases of congenital microcytosis and favism are now not uncommonly seen in the children of immigrants from Malta and Cyprus, and cases of sickle-cell anaemia among the children of immigrants from the West Indies and Africa. Except where prevented by marriage prophylaxis, that is the prevention of intermarriage between carriers of the genes responsible, these diseases will recur in this country for at least the next 1,000 years. It may well be, however, that such immigrants are relatively free from other mutant genes, and on balance they may not be contributing to any unreasonable increase in the total frequency of such genes in the British population.

Where the disease is largely environmentally determined, any increase is likely to be short-lived in terms of generations. Nevertheless, the temporary problem may be a real one. The special situation of male immigrants unaccompanied by their families, and the relatively uninhibited sexual mores of the West Indian and African immigrants, has resulted in their making an undue contribution to the incidence of the venereal diseases.† Smallpox is not likely to be seen in this country except when introduced by immigrants. Tuberculosis, if there was no immigration, would rapidly become a rare disease, as a result of vaccination, the new effective drugs and careful tracing of contacts. Tuberculosis, however, is relatively common in India and Pakistan, and in English cities where there are many Pakistani immigrants, the satisfactory reduction in the incidence of new cases in the natives is now being nullified by fresh cases discovered among immigrants.‡ In Bradford, for example, the number of new cases of tuberculosis in adult males increased from 186 to 234 between 1954 and 1961, a fall of 174 to 110 in non-Pakistanis being more than balanced by a rise from 12 to 124 in Pakistanis. Both Indian and the small number of Chinese immigrants are also known to bring in cases of tuberculosis in excess of the incidence in the native population, though this is not the case with the West Indians.

* Smithells, R. W. 1962. *Lancet* i, 1270; Leck, I. M. and Miller G. L. M. 1962. *Brit. med. J.* ii, 16.
† *Brit. med. J.* 1962. *i.* 1751.
‡ *ibid.* 1962. *i*, 1397.

The Irish in this country have a high incidence of tuberculosis, but this is due to lack of resistance to infection; they are not infected when they enter England.

Both the genetic and the environmentally caused diseases raise difficult medical and ethical problems. Section 2(4) of the Commonwealth Immigrants Act 1962 enables an immigration officer to refuse entry to the United Kingdom of a Commonwealth citizen, if it appears to the officer, on the advice of a medical inspector, that it is undesirable for medical reasons that the citizen should be admitted.

It is possible to take the view that Britain should, within reasonable limits, accept the burden, since this country is well fitted to treat both types of disease, where treatment is possible, and to apply negative eugenics by means of genetic counselling to the genetically caused conditions. But it is also clear both that we should know in detail what is happening, and that we should take all possible steps to see that the resident population is not infected by immigrants. The loop-hole which allowed in the most recent case of smallpox will no doubt by now have been closed. But it is obvious that all immigrants from areas with a high incidence of tuberculosis should have chest radiographs on entry—it is estimated that half the new cases in Pakistanis would have been detected at entry—so that those found affected can be segregated and treated until non-infectious. This measure has twice been recommended by the B.M.A.*, and is in the interest of the immigrants themselves, since some at least are infected by their fellow immigrants after arrival in this country.

HEREDITARY GENIUS

ANOTHER CLASSIC NOW published as a paperback is Francis Galton's *Hereditary Genius*.† When the second edition of this book was reprinted in 1950, with the aid of a grant from the Eugenics Society, it was the subject of editorial and other comment in these pages.‡ The reprint under review owes much to its foreword by Professor C. D. Darlington, F.R.S.

Our summary of the *Society's* Questionnaire —A Survey of Opinion—showed (July 1962, p. 57) that a surprising number of educated people are unaware of Galton's theories and his influence on nineteenth century thought. Professor Darlington's Introduction to the new edition of *Hereditary Genius* is therefore most welcome: first he outlines Galton's background and describes his breadth of interest and invention—"Whether it was in photography, in physical models, or in weather maps; in the recognition of anticyclones or in the general prediction of the weather; in every direction Galton's enterprise equipped, while his writings spurred on, that adventurous generation. . . . But his faculties were brought into one focus by Darwin's theory of the origin of man. His mind began to torment him when he thought of the new ideas; but it did not move quickly to a conclusion. The first decisive result appeared after ten years in this volume we now have with us."

After outlining the general arguments of the book, Professor Darlington describes and discusses the interaction of Galton's theories and discoveries with those of Darwin and of Mendel. But the chief value of his essay is in the pointing out of some of the pitfalls into which Galton's ideas led him. *Hereditary Genius* has been strongly criticised on this account, but, illuminated by Professor Darlington's Introduction, it can now be read with profit by newcomers to the study of Francis Galton's work.

OBITUARY

SIR RONALD FISHER, F.R.S., F.S.S., Sc.D.

Ronald Aylmer Fisher, mathematician and biologist, died on July 29th, 1962 at the age of seventy-two. His life and work were fully recorded in the national press, and need no repetition here, but Fellows and Members may not realize how closely he was connected with the Eugenics Society in its early years. He joined the *Society* in 1912 and served on its Council from 1918 to 1920. He acted as one of its Joint Honorary Secretaries from 1927 until 1930 and thereafter held office as Vice-President or as a member of

* *ibid.* 1961, *ii*, 1624.

† London, 1962. Collins: The Fontana Library. Pp. 446. Price 8s. 6d.

‡ THE EUGENICS REVIEW, 1951, **43**, 3-5, 64; 1952, **44**, 39-40.

the Council until 1942. During this period he was for some years a member of the Editorial Committee.

He contributed many articles to THE EUGENICS REVIEW. A few of their titles indicate the wide range of subjects upon which he was qualified to write: *Darwinian Evolution of Mutations* and *The Evolution of the Conscience in Civilized Communities* (1922); *The Biometrical Study of Heredity* (1924); *Bayes' Theorem* and *Modern Eugenics* (1926); *Income Tax Rebates* (1928); *Family Allowances* (1932).

PROFESSOR C. D. DARLINGTON *writes:* Fisher's work in genetics and eugenics began with the ideas expressed at the age of twenty-eight when he wrote his solution of the controversy between mendelism and biometry. This solution was embodied in a paper he submitted to the Proceedings of the Royal Society in London. The two eminent assessors to whom the society referred the papers—their names may be guessed—agreed in rejecting it. It was probably the only occasion on which they had ever agreed. One rejected it because Fisher had endorsed the assumptions of mendelism, the other because he had accepted the methods of biometry. In consequence the paper was published by the Royal Society of Edinburgh at a cost which the author's friends were fortunately able to subscribe.

These early ideas of Fisher's he never seriously modified. The system of assumptions he used in 1918 was from Mendel. His terminology was from Morgan. But so far as the materials of heredity were concerned he preferred the expression Germplasm (which was calculated to irritate everybody) to the suggestion of visible entities conveyed by Morgan's chromosomes. For Bateson the chromosomes had been a superfluous assumption. For Fisher they were a variable whose geometrical properties he proposed to ignore except in situations which could be algebraically manipulated. For him therefore polyploids, not being genes, did not arise in evolution. They existed merely to demonstrate elegant ratios especially by experiments with *Lythrum salicaria.* Genes similarly did not evolve in their complex structural relations. When he was able to predict their structure in the Rhesus supergene in man it was a static structure; and it became an eternal truth.

When he addressed the Genetics Congress at Ithaca in 1932 Fisher reached the climax of his inductive reasoning in genetics. Others, he said, had used genetics to explain evolution. He, however, proposed to use evolution to explain genetics. Those were his words and they represented one of the most general ideas he produced. It was the basis of his theory of dominance. But there is no evidence that he ever realized that this notion was being applied in other genetic fields from which his rejection of chromosomes, or his inability to see them, unfortunately excluded him. For the dominance relations of genes reveal only a small part of what evolution is now known to do with them.

A propos of eyesight it has been said that Weismann turned to writing (and to speculation about the Germplasm) when his eyes failed him. But with Fisher it was different. His eyesight would have had to have been unusually good to have distracted his mind from its appointed course. And it was unusually bad.

Fisher's views of genetics developed, after 1918 largely, after 1932 entirely, along deductive paths. These inevitably led into a number of encapsulated deductive systems. In each of them he became more and more dogmatically convinced of the rightness of his own conclusions, reached as they were with an analytical penetration superb of its kind. It was a penetration which from the very beginning led him into conflict with lesser minds. As new fields of biology came into view by inductive processes from observations which Fisher was unwilling to consider, these conflicts became more numerous and were often distressing to his friends, or as he might have said, his enemies.

At the end, what are we to say? I believe, we should say this, that he was a man entirely devoted to ideas, especially certain ideas, and he was entirely without guile or cunning in his pursuit of them. To be sure they were mostly *his* ideas that he pursued, but they were always significant ones. It was this devotion which won him the equal devotion of his pupils.

One of the ideas to which he was devoted was undoubtedly the idea of eugenics. He believed

that men had a duty of considering their evolutionary future and using their knowledge and intelligence to shape it. Here we may see a virtue in his intransigence. But eugenics is largely a matter of education and education is a practical problem concerned with ordinary people having diverse views.

Practical problems, ordinary people, and diverse views, however, all presented Fisher with situations with which he was, unfortunately, not well qualified to deal.

DR. J. A. FRASER ROBERTS *writes:* It is unnecessary to add much to more formal tributes to the great genius and achievements of R. A. Fisher, except perhaps to say that if scientists were asked to write down a short list of the names of those whose labours during the last fifty years have changed the whole face of science his would probably appear in almost every list. What I should like to add is a more personal word.

I first met Ronald Fisher in 1925, and from that time onwards until his teachings became more widely spread and books and disciples multiplied, I often used to take my statistical problems to him. Sometimes they were trivial, sometimes I ought to have known the answers already, but always he was kindness itself, never showing the slightest impatience, and always ready to spend time in explaining the methods to be used. Sometimes, and this was when I felt rewarded, he would say that the problem was one he had not met before; and then it was indeed notable how quickly he would work out the solution. A young man could never have had a kinder or more inspiring guide.

Perhaps I might contribute one reminiscence which is surely typical of the impact his genius made on great men in other fields of science. Sir Sheldon Dudley, an epidemiologist of renown, was Medical Director-General of the Navy during the second World War. One day he sent for me. It was a critical time and on his desk lay the plans for D-day. But it was not D-day he wanted to talk about; it was Fisher's *Genetical Theory of Natural Selection.* "You know," he said, "it seems to me that this book is the greatest contribution to biology of this century."

Ronald Fisher was a delightful and entertaining companion. His wide interests and knowledge in many diverse fields made him a wonderful conversationalist. Meeting him was always a pleasure to look forward to. He will leave many kindly memories as well as the feelings of awe inspired only by those who are truly great.

PROFESSOR R. RUGGLES GATES, Ph.D., D.Sc., F.R.S.

WE REGRET TO record the death on August 12th, 1962 of Professor Ruggles Gates at the age of eighty.

Born in Nova Scotia in 1882 and educated in Canada and the United States, he first came to London in 1912 as lecturer in biology at St. Thomas's Hospital, and was Professor of Botany at King's College, London, from 1921 until 1942.

It was in 1921 that he joined the Eugenics Society, and shortly afterwards he was elected to the *Society's* Consultative Council, upon which he continued to serve for the rest of his life.

In 1936 he became Chairman of the Bureau of Human Heredity of which Mrs. C. B. S. Hodson was the Honorary General Secretary. Mrs. Hodson's enthusiastic support of the Eugenics Society may have been an added stimulus to Professor Gates's interest in eugenics. He wrote the introductory chapter, entitled "Genetic Principles," of the *Society's* symposium *The Chances of Morbid Inheritance* (H. K. Lewis, 1934) whose nineteen distinguished contributors guaranteed a wide sale in the years before the outbreak of the second war.

Few scientists can have travelled more extensively in the New World, the East and the Far East. Primarily a botanist, he later made many studies in anthropology and in human genetics which were published in various international scientific periodicals; he was generous in the presentation of reprints to the *Society's* Library. His books include *Heredity and Eugenics* (1923), *Heredity in Man* (1929), *Human Genetics* (1946) and *Human Ancestry* (1947).